

Amendment and Response Under 37 C.F.R. 1.116

Applicant: Raymond H. Kraft

Serial No.: 10/800,420

Filed: March 12, 2004

Docket No.: A126.253.102

Title: SYSTEM AND METHOD OF NON-LINEAR GRID FITTING AND COORDINATE SYSTEM MAPPING

REMARKS

The following remarks are made in response to the Final Office Action mailed November 30, 2009. Claims 8-15 and 21-28 have been withdrawn from consideration. Claims 1-7 and 16-20 were rejected. With this Response, claims 1 and 16 have been amended. Claims 1-28 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 101

Claims 1, 3 and 4 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Independent claim 1 has been amended to recite steps of establishing and calculating “using a data processing component”. As recited, claim 1 clearly provides a “tie” to another statutory category as well as a “transformation” of underlying subject matter by performing the steps of establishing and calculating using a data processing component. As a result, it is respectfully submitted that claims 1, 3 and 4 meet the requirements of 35 U.S.C. §101 and thus withdrawal of this rejection is requested.

Claim Rejections under 35 U.S.C. §§ 102 and 103

Claims 1, 5, 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Brandle et al., “Automatic Grid Fitting for Genetic Spot Array Images Containing Guide Spots”. Furthermore, claims 2-3, 17-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandle in view of Segman, U.S. Patent No. 6,178,272. Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandle in view of Kwon et al., U.S. Patent No. 5,091,972. Additionally, claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandle in view of Correa et al., U.S. Patent No. 6,340,114.

Independent claims 1 and 16 relate to calculating an absolute location of image feature centers in fiducial plate coordinates. Applicants respectfully traverse the rejections under Brandle and submit that Brandle simply does not disclose calculating an absolute location in fiducial plate coordinates as claimed. Moreover, in an effort to further prosecution, independent claims 1 and 16 have been amended to recite that an absolute location calculated indicates a

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distance measurement in fiducial plate coordinates. In genetic spot analysis, as taught by Brandle, one is concerned with the presence or absence of a spot and, in particular, an amount of hybridization that occurs at predetermined locations on a medium (e.g., filter, slide, microchip). See Brandle, Chapter 1, p. 357. A robot arm carrying a matrix of needles apply spots of gene product to the medium. In order to account for differences (i.e., a rotational angle) between an image of the medium and the predetermined locations of the matrix as positioned by the robotic arm, Brandle utilizes guide spots, which are spots placed on the medium at specified locations that consistently provide a high amount of hybridization. See Brandle, Chapter 1, p. 359. A grid fitting algorithm is used to identify guide spots and align the guide spots with where the guide spots should be given the matrix of needles. Thus, the “location” discussed in Chapter 3, page 361 of Brandle is merely a one-to-one relationship between where a guide spot is detected in the image and a predetermined position where the guide spot should be relative to the medium and is not an absolute location in fiducial coordinates. Moreover, the one-to-one relationship determination is independent of a distance measurement. There is also no need to calculate an absolute location that is a distance measurement as the guide spot location is predetermined. Thus, Brandle simply does not disclose the features recited in the independent claims. For at least these reasons, independent claims 1 and 16 are believed to be allowable.

Segman is another image scaling reference in which a pixel array having known locations is converted into a second pixel array having known locations and whereby the conversion is specified a priori. In other words, based on a first aspect ratio and a second aspect ratio, one can develop an algorithm to convert images between the two aspect ratios. This is in direct contravention of the claims of the present case, in which an image contains fiducials having a known location and objects that may randomly appear within the field of view. The point of claims in the present case is not to create a high fidelity reproduction of the image of fiducials and objects in various sizes and/or resolutions, but rather to identify in a real-world manner the position of the objects in the image relative to the fiducials. Segman does not provide a means for “calculating an absolute location of identified acquired image feature centers relative to the fiducial plate in fiducial plate coordinates” and cannot reasonably be read to suggest the same.

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Kwon teaches an iterative filtering process for reducing image noise and does not teach “calculating an absolute location of identified acquired image feature centers relative to the fiducial plate in fiducial plate coordinates”. That Kwon might use a linear least squares method is inapposite as Kwon does not teach those elements that are lacking in Brandle, namely that an absolute location is indicative of a distance measurement.

Correa et al. teaches a system for automatically reading address bar codes on envelopes and the like. Correa et al. do not teach “calculating an absolute location of identified acquired image feature centers relative to the fiducial plate in fiducial plate coordinates”. While Correa et al. may describe the use of cameras of the CCD and CMOS type, they do not teach all of the elements of the claims.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-7 and 16-20 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-7 and 16-20 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Todd R. Fronek at Telephone No. (612) 767-2522, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

Dicke, Billig & Czaja, PLLC
Attn: Christopher J. McLaughlin
Fifth Street Towers, Suite 2250
100 South Fifth Street
Minneapolis, MN 55402

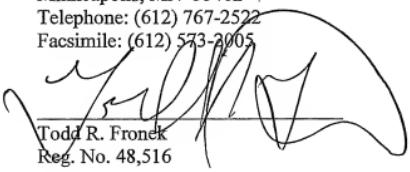
Respectfully submitted,

Raymond H. Kraft,

By his attorneys,

DICKE, BILLIG & CZAJA, PLLC
Fifth Street Towers, Suite 2250
100 South Fifth Street
Minneapolis, MN 55402
Telephone: (612) 767-2522
Facsimile: (612) 573-2005

Date: 3/1/10
TRF:skh


Todd R. Fronek
Reg. No. 48,516